

DETAILED ACTION

Citation to the Specification will be in the following format: (S. # : ¶/L) where # denotes the page number and ¶/L denotes the paragraph number or line number. Citation to patent literature will be in the form (Inventor # : LL) where # is the column number and LL is the line number. Citation to the pre-grant publication literature will be in the following format (Inventor # : ¶) where # denotes the page number and ¶ denotes the paragraph number.

Response to Arguments, Remarks

The objection to the Specification is WITHDRAWN. Applicants have cancelled Claims 19-21, rendering all rejections of the claims moot. Likewise, Applicants arguments are moot. Accordingly, all rejections are WITHDRAWN. Applicants have presented a new set of claims in place of Claims 19-21. New rejections appear forthwith.

Applicants independent claims, Claims 42 and 43, both recite lengthy preambles. The Examiner is not giving these patentable weight, as they appear to be reciting the process for making the carbon fiber, and not the heat treatment process – which is allegedly what this application is about. Alternatively, the preamble might seem to recite steps that are duplicative of those appearing after the transitional phrase, making the scope of the claim indefinite. Rejections appear *infra* to address this. If Applicants want to limit themselves to a specific method of making the carbon fibers (nanotubes or whatever), these steps should appear after the transitional phrases (i.e. “said process comprising”). Note for example that the present process appears to read upon reprocessing the crumbs/debris left over from a previous run.

Double Patenting

Claims 42, 45, 47, 50 and 53 are objected to under 37 CFR 1.75 as being a substantial duplicate of claims 43, 46, 48, 51 and 54, respectively . When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 50-52 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicants specification has been reviewed for the powder diameter limitation added, and it was not found. Note the passage of MPEP of MPEP 714.02 which states “[a]pplicant should also specifically point out the support for any amendments made to the disclosure.” Applicants have not done so here. If the Examiner overlooked a passage that supports this limitation, Applicants should call it to his attention by page and line number.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 42-55 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to Claims 42 and 43, it is not clear what steps are required by the claims and what steps are not required. Note the dual transitional phrases “characterized by” and “comprising.” Likewise, it is not clear what gas is required, and in what step. Could the pressure fluctuation be created by air? Or does it have to be an inert? All other claims import these defects. Furthermore, the temperature ranges overlap, begging the question of whether there are discrete steps at all, or whether there is one continuous graphitization step?

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The reference teaches each and every limitation of the rejected claims. The pinpoint citations are in no way to be construed as limitations of the teachings of the reference, but rather illustrative of particular instances where the teachings may be found.

Claims 42-52 are rejected under 35 U.S.C. 102(b) as being anticipated by US 2001/0051127 to Morita, et al.

With respect to Claims 42-43, Morita teaches two stage heating of carbon fiber within the claimed range. (Morita 1: [0006]). Morita describes feeding a gas through the furnace, which by definition, will cause a “pressure fluctuation.” (Morita 1: [0011]). As to Claim 44 and 50-52, notwithstanding the 35 USC 112 issues *supra*, Morita would appear to describe the properties claimed. Note that Morita, like Applicants, describes carbon fibers. *See e.g.* (Morita 3: [0005]) *et seq.*) This is the evidence offered to show inherency. “[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency’ under 35 U.S.C. 102, on prima facie obviousness’ under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted].” The burden of proof is similar to that required with respect to product-by-process claims. *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)). To argue that Morita may not have the properties claimed is a tacit admission that Applicants claims are inoperable, non-enabled, or both. Alternatively or additionally, a rejection for failure to claim essential steps may be appropriate. As to Claims 45-46, the furnace configuration appears to be taught. (Morita “Figs.”). As to Claims 47-49, Morita teaches vertical furnaces, i.e. one that would have gravity acting on the carbon fibers. (Morita 3: [0037]).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The references cited teach each and every limitation of the rejected claims. The pinpoint citations are in no way to be construed as limitations of the teachings of the reference, but rather illustrative of particular instances where the teachings may be found. As to the rejection under 35 U.S.C. §§ 102/103, where the applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the Examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection. See MPEP 2112 III. (discussing 102/103 rejections).

Claims 42-52 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 2001/0051127 to Morita, et al.

The preceding discussion of Morita accompanying the anticipation rejection *supra* is expressly incorporated herein by reference. See above with respect to 102/103 rejections.

Claims 42-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2001/0051127 to Morita, et al. in view of Andrews, et al., *Purification and structural annealing of multiwalled carbon nanotubes at graphitization temperatures*, Carbon 2001; 39: 1681-1687 (hereinafter “Andrews at __”).

The preceding discussion of Morita accompanying the anticipation rejection *supra* is expressly incorporated herein by reference. With respect to Claims 53-55, to the extent Morita *may* not recite the morphology claimed (i.e. nanotubes versus carbon fibers), this does not impart patentability. The skilled artisan would recognize the heat treatment of Morita as suitable, even desirable for carbon nanotubes. For example, Andrews teaches that heat treatments of multiwalled nanotubes increases their crystallinity, which is one of Applicant’s allegedly inventive features. *See* (Andrews at 1682 *et seq.*).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

All amendments made in response to this Office Action must be accompanied by a pinpoint citation to the Specification (i.e. page and paragraph or line number) to indicate where Applicants are drawing their support.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL C. MCCRACKEN whose telephone number is (571)272-6537. The examiner can normally be reached on Monday through Friday, 9 AM - 6 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel C. McCracken/
Daniel C. McCracken
Examiner, Art Unit 1793
DCM

/Stuart Hendrickson/
Stuart L. Hendrickson
Primary Examiner